

Project Fact Sheet

Project 4.3: Hybrid PV/Lighting System (SMUD / ReGen)

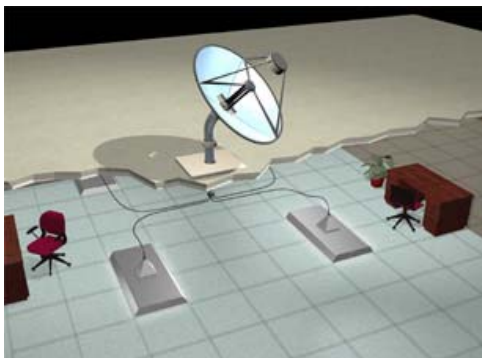
GOALS

- Demonstrate the technical feasibility of a novel solar concentrator that splits the solar spectrum, illuminating building interiors using the visible portion and generating electricity from the infrared portion via low-cost concentrating thermophotovoltaic solar cells.
- Address building code and permitting issues in a commercial setting.
- Develop a system-level building integration strategy.



PROJECT DESCRIPTION

Hybrid lighting is a revolutionary approach to lighting that integrates light from natural and electric sources. Hybrid lighting systems collect and distribute the visible portion of sunlight using large-core optical fibers and combine it with electrically generated light in existing light fixtures. The natural and electric light sources work in unison to light commercial buildings where lighting represents the single largest consumer of electricity. The remaining “invisible” energy in the sunlight, mostly infrared radiation, is directed to a concentrating thermophotovoltaic cell that very efficiently converts infrared radiation into electricity. The resulting electric power can be directed to other uses in the building. The purpose of the project is to demonstrate for the first time (in a commercial building setting) the technical feasibility of these systems (see the figure).



BENEFITS TO CALIFORNIA

This project supports the PIER Program objectives of developing systems for tomorrow's energy needs that are highly responsive to commercial demand, supply quality-of-life health/productivity benefits, fully-integrated with customer appliances (electric lighting) and offset peak demand. The demonstration promises to more than double the overall efficiency, affordability and market penetration of solar energy leading to smart, super-efficient, super-clean renewables having combined generation and displacement efficiencies greater than 70 percent.

FUNDING AMOUNT

Commission \$100,000
Match \$230,000

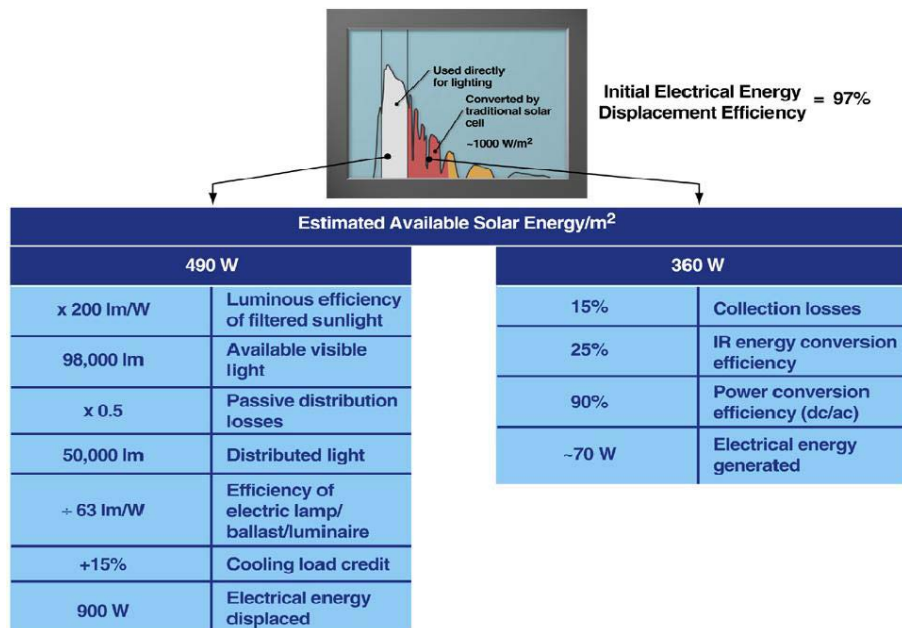
PROJECT STATUS

This project is not expected to be under contract until 2003.

FOR MORE INFORMATION

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Total Grid-Provided Electrical Energy Displaced = 900 + 70 = 970 W